

# PyroTechnics 41

## The Now & Then Newsletter of General Technics



### DON'T LEAVE HOME WITHOUT IT!

Aside from the obvious 'Do you know me?' or 'Don't leave home without it.' ads, it would be fun to find out what other kinds of captions we could come up with for this photo of Tullio Proni taken a few Ishercons ago. How about "Trust me! It's good on all the OTHER planets!" (Photo by Mary Lynn Johnson)

### MidWinter Miscellany

#### Bill Higgins & Mary Lynn Johnson

We've been surviving the winter well enough, braving blizzards and bitter cold to drive into Chicago and get this issue put together. Sam and Bonnie are discovering that one of the joys of home ownership is shoveling the sidewalks. Then when you've got the sidewalk clean, God dumps more snow all over it, just to keep you humble. But we're looking forward to spring cons and summer Berzerker Weekends, and hoping we'll see more of our readers then.

**Win the Next Best Thing to a Trip To Arizona Dept.:** We are in need of good questions to ask our brilliant (but erratic) science advisor, Doctor Techie. So we're having a contest. The best question submitted to us in writing by April 16, 1989 will win you your choice of a Large or Xtra Large Benson, Arizona T-shirt. Donated by Mary Lynn, this handsome garment is a splendid souvenir of the town that's both Garden Spot of the Southwest and Gateway to the Phoenix Asteroids. Questions will be judged on intrinsic curiosity-grabbing, sensawunder, and educational value. So sharpen your pencils and send 'em in, and we'll get Dr. Techie to cough up the answers. As soon as we can find him.

**Wicked Glitch of the West Dept.:** Due to a computer error in transferring Jamie's files, the previous number of issues left printed on the mailing label of #40 may have been wrong. In the end we sat on the disk and squeezed it until it said, "Uncle." The figure that appears on this issue's label is the True and Correct number of issues you have left as of February 20, 1989. We apologize for any misunderstanding or inconvenience this may have caused.

**Crass Commercialism Dept.** We've decided to offer advertising services in *Pyro*. This will help our tightly stretched finances to get a bit ahead, and allow advertisers to reach about 150 demographically elite techietype subscribers (plus who knows how many people reading over their shoulders). Rates are pegged at \$15.00 per half-page, camera-ready ad.

What's that you say? You want classifieds? We'll print classified ads, of up to 100 words, free. The catch: You must be a *PyroTechnics* subscriber. This is a chance to move that steam-powered snowmobile or those dry-ice skates into somebody else's basement. We'll even print personals. "SWM techie, 28, wishes to meet SF with own darkroom. Exchange schematics, image enhancement algorithms, backrubs."

**Giddy Nostalgia for 1988 Dept.:** Back issues of *PyroTechnics* are now available while supplies last. Currently, we only have a limited quantity of #39 and #40 on hand. We hope eventually to have more, but there's

no news on that yet. Each issue can be had for four (4) 25-cent U.S. postal stamps. (If you're outside the U.S., you can send us a postal money order made out to Connie Trembley—for \$1.25 if you're in Canada or for \$2.00 if you're overseas.)

**Revenge of the Mobsters Dept.:** Some folks have requested that we bring back the Mob List. An address listing of all the current subscribers to *Pyro* would make it easier for GTers to get in touch with one another. Our present feeling is that we should print this list in the larger fall issue.

Therefore we make the following request: If you *don't* want your address or phone number published, please let Mary Lynn know as soon as possible. We'd also like to make any corrections that might be necessary, so please check your mailing label for errors.

**Well, I Heard It through the Grapevine Dept.:** If you've got an article or letter for us, and you can get to the academic networks, Bill Higgins will get your electronic mail to us if you send it to:

Bitnet: HIGGINS@FNALB.BITNET

SPAN/Hepnet/Physnet: 43011::HIGGINS

Internet: HIGGINS%FNAL.BITNET@UICVM.uic.edu

### Do You Know Me?

Mary Lynn Johnson

The process of tracking down people who've changed addresses since *Pyro* was in Jamie's domain has been a difficult one. What follows is a list of all the people who have paid for issues, but whose *Pyros* have been returned because the addresses we have for them are incorrect. I ask that any of you who might know these folks send me their updated addresses as soon as possible. In the meantime, we will hold their subscriptions in stasis.

Ed Curtis	Joel Davidson
Avery Davis	Michelle Donat
Ed Hanley	Doug Humphrey
Sherry Katz	James Lawson
Mike Mahaffey	Doug Mallinak
Bill Nunne	George Popa
William Seligman	Frank Stodolka
John Upton	Jeff Vogel
Rachel and Mike Yudkowsky	Ben Zuhl



### Quarks

• Jeff Duntemann reports that in walking his dog along the beaches at Santa Cruz, he came upon a beached elephant seal. "A thousand pounds," he says, "and the size of your sofa." California is a wonderful place, isn't it? The collapse of Borland's *Turbo Technix* hasn't left Jeff idle. He's writing a series of assembly language books, editing some other books, and fooling with tech in the basement. "Carol and I bought one of those teeny-tiny 8mm video cameras last week, and it's quite a tour-de-force in miniaturization... we could do a sort of Video Technics. I have this vision of *showing* people how to assemble the Sewer Pipe Telescope instead of just writing about it and taking a few still photos." Anybody interested?

• GTer Sheila Groves married Paul Goodman on December 10 in Rochester, New York. In January, Sheila attended Confusion 102 in Southfield, Michigan, where we asked her for her reaction to married life. Her memorable reply: "Well, it's kind of strange, going to bed with the same guy every night." Best of luck to the new couple. (We don't think Paul reads *Pyro*.)

• Speaking of Rochester, Jo Anselm is leaving the banks of the Genesee for a job in Chicago. Hmm, wonder if we can get some work out of her putting *Pyro* together. Maybe Barry Gehm can persuade her... The February issue of *Macworld* ran a little piece on last fall's Hackers' Conference, complete with a vivid color photo showing Mike Bentley, Vicky Winslow, Al McNeil, and "Richard Cheshire" (who is eclipsing Guy Wicker, if we're not mistaken). Vicky's dog is in the photo too, but we can't remember his or her name...

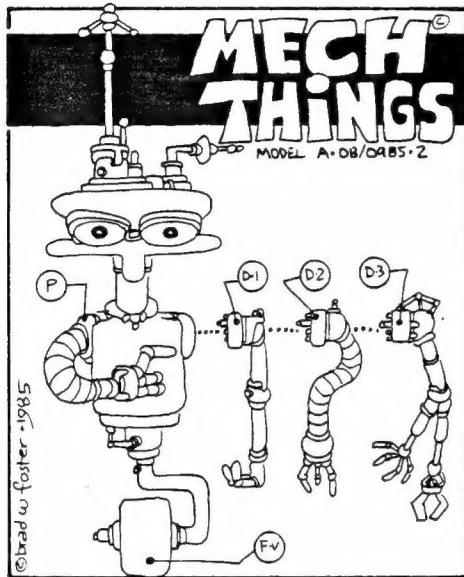
• Jon Singer has been at Apple a year now, has started learning to fly, and is thinking about living alone in the northern California woods. Midwesterners can see him at just about any con that happens in Minneapolis. He writes: "Do you know anyone who needs a 50mW HeNe [laser]? (That's right, 50mW.) I have a Jodon HN-50 with a bad tube, and the guy who owns it would be very pleased if I could sell it. I would retube it, but I don't have \$2050 lying about. Whoever buys it needs to be aware of the relevant expenses. On the other hand, 4 or 5 thou (*including* new tube) is a whole lot less than buying one of these things new!"

• Kevin Kinnell, formerly a Michigan Tech guy, was interviewing for a job at Indiana University. He picked up a Rubik's Cube in the professor's office and started twisting it around. Now Kevin has spent many hours with Cubes, and learned to solve them long ago. He's gone way beyond that, to rearranging them into geometrical patterns. Checkerboards and tic-tac-toe, we suppose. His interlocutor, Douglas Hofstadter of *Gödel, Escher, Bach* fame, was impressed enough to hire him for the parallel-processing project IU's doing. See, solving puzzles isn't really a waste of your time...

• John Lussmyer was looking through a zine called *Con News* and found the rules for the "Critter Crunch," an unusual competition at the last MileHiCon. Build a vehicle that fits in a one-foot cube and weighs under 20 pounds. Power must be internal but remote control is permitted.

Last vehicle still moving, and still on the table, wins. We missed the 1988 competition, but John suggests that our readers might take up the challenge if the Denver folks repeat this event. We bet you could find out more by calling Bill Llewellyn at (303)795-9677.

- Question of the month: "Where did a gorilla get twenty bucks?"



## Go Berserk For A Weekend In July!

Once again, it's time for Guy Wicker's Amazingly Huge Houghton Berserker: over a week of hiking and camping in the beautiful Upper Peninsula of Michigan. While the main festivities are set to take place on the weekend of the 28, 29 and 30th of July, Guy plans to be there starting on the 22nd and invites everyone to come up early. Folks can also stay later if they like.

There are old copper mines to explore, rock formations to climb, beaches to walk, restaurants to try, and fireworks to set off. There are also plans to take an expedition off to the mines to do some copper hunting with metal detectors. Guy didn't tell us what kind of additional mayhem he's got planned for this year, but if it's anything like previous years, it should be a real kicker.

Once again, McLain State Park is the home base for the event. Please call the park for current rates (last time it was \$8.00 per nite for a campsite) and reservation instructions. Park phone number is 1-906-482-0278. In the past, getting a reservation a month in advance was enough, but since a large number of people have already said they're going, it might be prudent to call a little earlier. Campsites can accomodate 2 tents, 2 cars and 4 people, maximum, and hot shower facilities and modern bathrooms are available. Electric outlets are also provided.

Guy requests that those who know that they will be attending call him at 1-313-647-1820 so that he can get an idea of how many folks he has to set up for. He also will have more information by the time issue #42 comes out in late May.

## If May or May Not Come In The Mail

Jeff Duntemann

I wouldn't be surprised if it's been eight years or so since my last *PyroTechnics* mail order report. My catalog box has certainly turned over two or three times since then, (although I think I may still have some particularly odd Seventies titles lurking on the bottom somewhere) but has broadened over the years, as I have. (Intellectually, at least.)

So this installment, I'll do something a little different and list *only* catalogs that have little or nothing to do with electronics. Weird stuff has always been best sold through the mail, and there is no shortage of non-electronic techie mail order.

**Northern Hydraulics** is a wonderful place, the place you buy things that *aren't* teeny and fragile. We're talking backwoods mechanic stuff for George Ewings in training: Small engines; air compressors; hydraulic pumps, valves, fittings, motors, and guages; log splitters, chainsaws, sand blasters, gas generators and other outdoorsy farm/wilderness tools; air tools; hand tools; wood stove components and supplies; trailer bearings, parts, and complete trailer kits ("just add plywood!"); parts bins and tool cabinets and God only knows what else. They ship fast and their prices are very good. I've bought hundreds of dollars in tools and oddments from them over the past three years and recommend them highly for this kind of thing.

PO Box 1499

Burnsville MN 55337-0499

1-800-533-5545

**Burden's Surplus Center** started sending *Carol* catalogs out of the blue in 1986. They're similar to Northern Hydraulics, if not as large or diverse, in that they sell mechanical, electromechanical, and hydraulic things; engines, work clothes, welding supplies, inverters, air tools, alarm system components, etc. Only bought once, had no trouble.

1015 West O Street

Lincoln NE 68501

(402) 474-4366

**Elwick Supply** sells small metal stock and odd hardware. They're good to have on file because they sell teeny screws down to 000-120 (brass) and standard-sized hardware in nonferrous metals like brass, aluminum, monel, stainless, and silicon bronze. Odd items like knurl nuts (for binding posts) T-nuts, acorn nuts, castle nuts, wing nuts, nylon stop nuts, turnbuckles, and so on. Also small tubing, channel, rod, and plate in brass, aluminum, and some copper. Prices on the high side, but where else ya gonna get this stuff?

230 Woods Lane

Somedale NJ 08083

**Solotype** is definitely the place for typography freaks. This dude has been collecting cold type for thirty years, and he has a collection of faces that defies description. What he sells is typesetting, most properly, but in faces you will find nowhere else. He does decorative effects on the type as well, things involving wrapping type over cylin-

ders and snapping it with weird twists, distressing it to look like something off a colonial-era tombstone, and on and on. Their catalog is both hilarious and instructive. Not cheap for typesetting, but it's a niche and he's it. Get the catalog, whether you do typesetting or not.

298 Crestmont Drive  
Oakland CA 94619  
(415) 531-0353

**Lindsay Publications** wins the prize as definitely the find over the past three years. It's a small outfit run by a techie named Lindsay who publishes some (few) new titles but mostly turn-of-the-century reprints of reference manuals in fields like machinining, foundry, experimental science, electroplating, and lots of other totally weird and wonderful things. I have bought \$200 in books from him over the past year. Fast service, no hassles, and the books are wonderful. One of his highlights is a new series on what we SF guys would call "post-armageddon" books; i.e., how to build a lathe with junk and hand tools, and use the lathe to build a bigger lathe, a mill, a drill press, a dividing head, and so on. This involves casting aluminum, and a series of books on home foundries by David Gingery has really set my antennas twitching. Once a moment

of time frees up (ha!) I intend to build "Li'l Bertha", a small electric furnace made out of electric dryer heating elements, electric stove "stepless" controls, castable refractory cement, and some sheet metal. Don Fletcher has done this and loves it. I intend to explore it for making telescope parts and large scale model railroad items.

I cannot emphasize how good this stuff is. Lindsay, whomeverthehell he is, is one of us. Get both his catalogs: Technical Books and Electrical Books.

PO Box 12  
Bradley IL 60915-0012  
(815) 468-3668

**Pyramid Products** is a small foundry supply firm whose catalog I just got. They sell a line of small natural-gas melting furnaces, green sand, crucibles and tongs, castable refractory, etc. Haven't ordered anything yet but the catalog looks good.

3736 South 7th Avenue  
Phoenix AZ 85041

I guess I could go on, but space is short. One of my thrusts in coming back to *PyroTechnics* is to point up technologies that get ignored in the face of electronics. I've been fooling with hydraulics, and I've discovered the

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And the Boys Themselves

**ONLY  
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Like This Only Much Bigger  
(And In Color)

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With a Darn Good Quality Full Color Picture  
Of a Couple of High Quality Fellows

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highly desirable piece of sportswear!

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wonders of plastic pipe fittings as raw materials. I have the nutty goal of putting up a 7 1/2" gauge railroad around my house—and them's the ones you can ride. Maybe I'm all blinked-out; maybe I realized that at 36 I'm about half lived-out and need to get cracking to become a gen-u-wine Re-nay-sanse man. But the universe is made of more than electrons. Time to pick up a file, and start dealing with moving parts again. Why not come along?

### Dave Ifversen - BioData

I was born in Detroit on January 30, 1959. I grew up in the Detroit suburbs with a younger brother and sister. Some of my earliest memories are of trying to hook up a set of electric trains, and since then I have been interested in electricity, electronics, and all things mechanical.

One of the easiest ways for a young person without much money to get stuff to tinker with is by "dumpster diving." I learned at an early age that parents don't appreciate the finer points of this sport, and that all "treasures" brought home from dumpster runs had to be hidden in the basement, the garage, or the shed out back, lest they be declared "trash" and disposed of. This is a habit I have not outgrown, much to the annoyance of my wife.

When I entered high school, I discovered the joys of the electronics shop, with its test equipment and massive parts box -- a cabinet filled with all sorts of wonderful scrounge. It was at this time that I was introduced to another of life's great pleasures -- the hamfest. Using parts picked up from hamfests and the electronics shop, I built sound equipment and "blinkies" for our high school theater department.

When I went to college at Michigan Tech University, I brought with me an interest in things technical, and a love of the theater acquired in high school. I put both of these hobbies to use by becoming involved with the University Sound and Lighting Services, a group I was later to head.

While visiting some friends on the other side of the dorm, I was introduced to a neighbor of theirs -- a wild-haired man called Cap'n Al, who liked to play with flash-blasters during power failures. Shortly after that I joined the Michigan Tech Science Fiction and Fantasy Society, also called PFRC, and met Todd Johnson and his wife Mary Lynn. Several of us formed the Saturday Evening Dessert Club, a group devoted to fun, friendship, and a love of good food.

Today, I work with several other GTers at Fermilab, one of the world's biggest video games (even though more serious people will say we do high energy physics research).

### Squibs

Joa Schürmann's article on aqueducts in the last issue provoked responses from two correspondents, both of whom cited the same Scientific American article. And just as this issue was going out the door, the March 1989 Scientific American materialized with yet another article on page 98: "The Roman Aqueducts of Nîmes," by George Hauck. It's a modern engineer's analysis of some of the Roman design calculations, such as optimal depth and grade of the aqueduct and wind loads on bridge structures. What timing! Do you suppose they read PyroTechnics? —Editors

### Water Rises In Reply: 1

Franz Zrilich

In the June 1985 issue of *Scientific American* (an amazing publication at times!) A. Trevor Hodge, in "Siphons in Roman Aqueducts," addresses several issues that Joachim

Schürmann raised in his article, "Water Rises to Its Source" [Pyro #40]. Hodge states that the Romans did build pipes strong enough to withstand 18 atmospheres of pressure, and could be used with pressure heads of 180 meters below the source of the water that they carried. The pipes were made of sheet lead curved into the form of a pipe and the edges soldered together. An aqueduct would carry nine of these pipes, each 25 to 27 centimeters in outside diameter, with three-centimeter-thick walls. Pipe lengths were about three meters.

The pipes were buried underground to protect them from day-night thermal swings, as well as from vandals. Because of internal friction between the waterflow and the inside of the pipe, pipe gradients had to be ten times greater than with open aqueducts. Each meter of pipe weighed several hundred kilograms, because it was made of nine pipes. The forces of flowing water, high-pressure heads, friction, and the inertial thrust of moving water (how do you turn off an aqueduct? Slowly, to avoid potentially explosive water hammering) required the pipes to be embedded in masonry.

Lead was cheap to make for the Romans, but very expensive to transport. So much so that the Romans preferred open-air aqueducts over lead pipes. They used lead pipes with great reluctance, which is why we today seldom see or read about them.

Hodge also mentions that lead poisoning was not a serious problem, as the calcium that is in most water sources rapidly formed a thick protective crust over the lead.

Hodge does not explain why the Romans would use nine pipes, side-by-side, rather than one large pipe, to carry water, but the reason is clear to most hydraulic engineers. Assuming a wall thickness that is constant, the safe working pressure of a pipe goes down with its increase in diameter. This is a function of several variables, but can best be illustrated by the following mental experiment:

Imagine a dam across a stream. The dam is three feet high and has at its base a hole one eighth of an inch in diameter. If we were to place a bicycle inner-tube patch, coated with water-proof adhesive, over that hole from the upstream side of the dam, we can easily see that the hole would no longer leak water.

On the other hand, if we were to have a hole a foot in diameter, a huge patch of rubber the same thickness as before would undoubtedly rupture. We would need something thicker, something stronger, such as a steel plate with a rubber gasket and waterproof adhesive.

So it was with Roman pipes. Lead is not strong. In order to compensate for this lack of strength, high-pressure water pipes had to be made small in size and used in gangs of nine.

### Water Rises In Reply: 2

Fred Robinson

In Pyro #40, Joachim Schürmann (International Plumbing Editor) makes note of the apparent lack of siphons in the Roman aqueducts. He speaks of Max Frisch and one of that author's characters, who "demonstrates" the Romans' lack of original thought in not using siphons to cross topographical obstacles.

I would like to direct Mr. Schürmann's attention to the June, 1985 issue of *Scientific American*. Therein lies an article entitled, "Siphons in Roman Aqueducts," by A. Trevor Hodge. This article shows that the Roman engineers were aware of the siphon principle, and were quite adept at constructing them. The aqueduct system serving the ancient town of Lugdunum (which today is Lyon, France) consisted of four aqueducts incorporating no less than nine siphons, the longest of which is some six kilometers from end to end.

These siphons spanned the larger valleys in the area, and were of the "inverted" type, which is to say that they were U-shaped and did not require that the water be sucked up into them before they would work. The outlet ends of the siphons were somewhat lower than the inlets, to compensate for friction within the pipes which slowed the water. Several pipes (about 25-27 cm in diameter) were used in each siphon, instead of the modern tendency to use just one, probably due to the difficulty of making large-bore lead pipes. At the bottom of the valley, a bridge, called a venter, carried the pipes from the downward incline to the upward.

Mr. Hodge also addresses the problem of cleaning the pipes, as any user of hard water will admit exists. He quotes Vitruvius, who says in translation, "In the bottom of the siphon we must put collivaria to release the air pressure." One problem is the word *collivaria*, which appears to be unique in Latin; and the other is the matter of releasing air pressure. Air collects in pipelines only at high points, of which there are none in an inverted siphon. Mr. Hodge postulates that the *collivaria* were valves used to facilitate the cleaning of the pipes.

The Greek siphon at Pergamum (Pergamon) is apparently more of a standout than the siphons of the Romans, which have gone largely unnoticed and have decayed to a great extent. This has led modern historians to assume that the Romans did not know of the siphon principle.

Mr. Hodge concludes his article by stating that a typical siphon required a bloody huge amount of lead for the pipes, on the order of 15,000 tons of the stuff for the Lyon siphons. Today, we would use cheap cast iron, which the Romans could not produce at any price. It was cost, not practicality or maintainability, that limited the use of siphons and piping in general. The Romans were no dummies. They just had some of the same problems that we have today (or do we have theirs?).

### Confusion To Our Enemies

Barry Gehm

An item in the January 10 issue *Washington Post* (cited in the January 20 issue of *Science*) reports that *Pravda* has begun carrying an astrology column. Although once rejected by the Communist Party as a pseudoscience contrary to the principles of dialectical materialism, it appears that astrology will be tolerated under *glasnost*. This news creates a dilemma for skeptics in the U. S.: should we be pleased that our most powerful international adversaries are showing they're no smarter than Americans, or saddened at another example of the spread of irrationality?

### A Model of Correctness

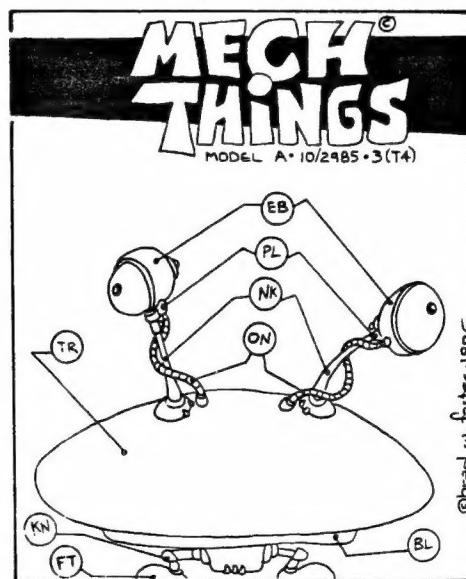
Barry Gehm

The February issue of *Natural History* contains the following remarkable notice:

**CORRECTION:** The October, 1909 issue of *The American Museum Journal*, forerunner of *Natural History*, reported that Cmdr. Robert E. Peary had reached the North Pole... Subsequent research indicates Peary did not reach the Pole. The editors deeply regret this error.

Actually, recent reports suggest that Peary's critic may have erred. In any case, *Natural History* is to be applauded for its commitment to accuracy. As someone who has struggled with little success to get such authorities as Isaac Asimov and *Scientific American* to correct in print errors they had made in print, I can testify that such fastidiousness is all too rare.

(*Heck, Doc*, the New York Times prints corrections, too. One famous one concerns their editorial in January, 1920, ridiculing Dr. Robert Goddard for asserting in his Smithsonian report that rockets could work in a vacuum and thereby fly to the Moon. The Times marveled that a physics professor would be ignorant of something every high school student knew—that the rocket exhaust wouldn't be able to push against any air, and no thrust would result. The paper ultimately admitted its error. I believe it's in the issue of July 22, 1969. —Bill Higgins, boy typesetter)



### CHOCOLATE ICE CREAM TASTING

Al Bradley at Woods Hole was wondering what his spreadsheet software was good for. What use are all those statistical functions in the Real World? At a family reunion, Al finally got to use those features. They lined up different kinds of ice cream and had everybody rate them. The results speak for themselves (to the statistically literate reader; Doug Hofstadter would call it "numerate"). We reprint the results here as a public service.

# CHOCOLATE ICE CREAM TASTING

Scarlet Family (extended)

Thursday, September 1, 1988

**Ice Creams**  
 Brighams Tofutti Breyers HoJo's Stop&Shop Früsen-G Ben&Jerry Hagen Däaz avg. score  
 given std. dev. of  
 score given

Taster	Ice Creams										
Children	Brighams	Tofutti	Breyers	HoJo's	Stop&Shop	Früsen-G	Ben&Jerry	Hagen Däaz	avg. score	given	std. dev. of score given
A	5	2	7	6	1	1	8	10	5.00	3.38	
B	5	0	6	7	2.5	10	10	10	6.31	3.73	
C	9	0	10	8	1	10	9	10	7.13	4.16	
D	4	3	4	4	1	3	1	9	3.63	2.50	
E	6	3	7	8	0	10	10	8	6.50	3.46	
F	5	2	6	6	8	8	7	3	5.63	2.20	
Parents											
A	4	1	5	6	0	10	9	7	5.25	3.54	
B	4	3	4	5	4	7	8	4	4.88	1.73	
C	3	0	5	7	1	8.5	10	7.5	5.25	3.63	
D	7	2	8	5	1	9	7	6	5.63	2.83	
E	4	4	5	5	4	9	9	7	5.88	2.17	
F	3	6	4	4	4	7	9	5	5.25	1.98	
GParents											
A	6	3	7	7	4	8.5	10	9	6.81	2.42	
B	2	2	2	5	1	6	6	5	3.63	2.07	
AVG.	4.79	2.21	5.71	5.93	2.32	7.64	8.07	7.18	5.48		
st.dev.	1.81	1.67	2.02	1.33	2.23	2.73	2.40	2.32	1.04		

## Thank You For Observing All Safety

### Precautions

Barry Gehm

"Cold Smoke," Max Monningh's article on dry ice (*Pyro* #40), closed with the words, "Dry ice can give you hours of enjoyment: at work, at home, around the campfire, or even during your next airplane ride...." The reference to airplanes was deleted by the editors and reinserted by gremlins. Pieces of dry ice may burst violently when exposed to reduced atmospheric pressure. *PyroTechnics* does not recommend playing with dry ice in airliners, spacecraft, or any other environment subject to drops in air pressure.

Also, Jon Singer wrote in to point out that CO<sub>2</sub> is not simply an oxygen deficiency hazard, but is actually toxic at concentrations above a percent or so. Use and store dry ice only in well-ventilated areas, especially if you buy a 50-lb block.

Of course, in the same issue we talked about partying with high explosives, dangling high in the air from hydrogen-filled home-made balloons, and building a generator whose "voltage increases exponentially until something arcs over."

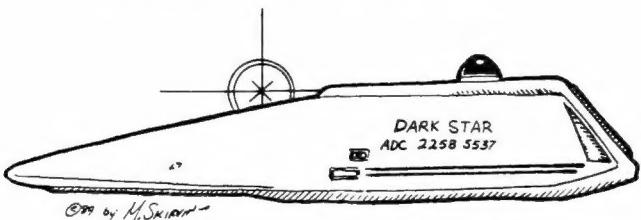
I sense a pattern here.

Techies' ideas of fun seem to consist of doing, on a grand scale, all those things our mothers wouldn't let us try as children, because they were too dangerous. As Tullio Proni says, "There's nothing a techie won't try (in someone else's house)."

Needless to say, we here at *Pyro* don't want our readers to be frostbitten, asphyxiated, exploded, burned, mangled or electrocuted (not all of them, anyway). Neither do we want them to be bored. Nothing described in *Pyro* is terribly dangerous if you know what you're doing; nothing in the world is terribly safe if you don't.

Therefore, by way of disclaimer of liability, we offer the following advice: Don't do anything stupid.

And when in doubt, ask your mother.



## The Town That Relativity Forgot

Mary Lynn Johnson

Benson, Arizona,  
Blew warm wind through your hair.  
My body flies the galaxy,  
My heart longs to be there.  
Benson, Arizona,  
The same stars in the sky,  
But they seemed so much kinder when we watched  
them you and I.

Most of us are very familiar with this song which is the theme to the film *DARK STAR*. Bill Taylor wrote it, but I have been unable to find out exactly why he chose the little town of Benson to sing about. The song has been a sentimental favorite among General Technics members for many years, but what of the town itself? In a quest for postcards, I decided to call the Benson, Arizona Chamber of Commerce. I talked to Renee Basile-Bearse, who is the executive director there, and we had a very nice conversation. As we talked, she told me that she knew of the song

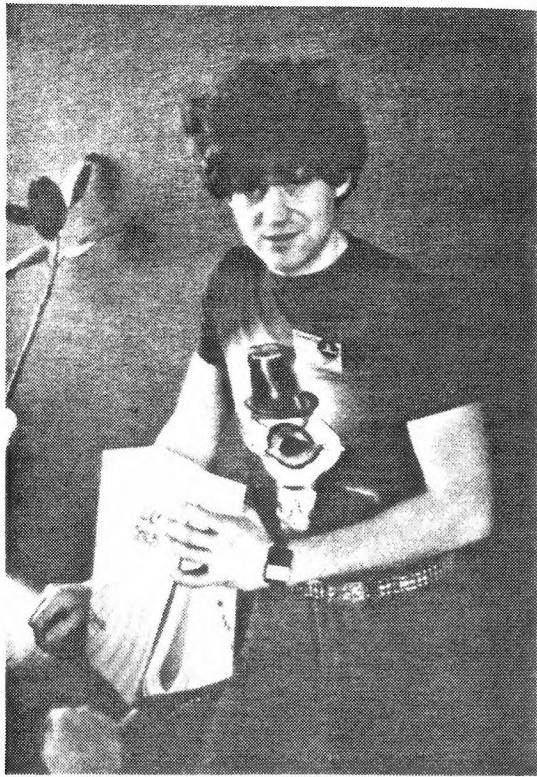
Benson Arizona, but had no idea why their town had been written into it. (I will try to answer this question in a later issue of *PYRO*.) She was also very amused to find out that there was a crowd of people who've been singing 'Benson Arizona' at midnight on New Year's eve for about ten years. It was at this point that I realized that it would be a good time to write an article about Benson and its history.

Nestled near the banks of the San Pedro River in southeastern Arizona, the town of Benson was founded in June of 1880. It was named for Judge William B. Benson of California who was a good friend of Charles Crocker, president of the Southern Pacific Railroad. The Southern Pacific chose the site as a good place to cross the River. Eventually another rail line established its terminus there from Guaymas, Mexico. Benson then became a center of freight activity in Cochise County. In those days, Benson enjoyed the rich history of a true western mining town: the saloons, the stagecoaches and cowboys, the houses of ill repute and gambling halls. With growth, lawlessness eventually gave way to stability and culture. However, in 1910, the railroads decided that Tucson, 45 miles to the northwest, was a larger city and therefore better suited to their needs. The loss of a major portion of their rail commerce was a serious blow, but cattleranching gradually became a viable alternative.

Agriculture in the Cochise County area grew rapidly with the help of a system of canals, dams and irrigation ditches that lead from the San Pedro river. It was in this time period (the 1920's), that one of their major industries was established. Built just 6 miles outside of town, the Apache Powder Company provided many needed jobs and buttressed the town's economy during the stresses of the Great Depression. With products such as nitric acid, sulphuric acid, and ammonium nitrate, the company was the second largest explosives manufacturer in the United States. It is said that when they set off a charge at the plant, the folks in Benson hear it and know it's just some more products testing taking place. Ms. Basile-Bearse also said that the Apache Powder Co. is the only source in the U.S. for fuses.

At an elevation of approximately 3,600 feet, Benson enjoys a moderate climate with warm summers and winters that see very little snow. The rough mountains ringing the town are a part of Coronado National Forest. Today, the area is host to rockhounds, bird watchers and hikers, as well as amateur and professional scientists. The land of the Apache Chief Cochise and the renegade Geronimo is now home to a population of around 4,000 individuals, 23% of whom are 65 or over. Although Benson is a small community, its central location makes it an ideal base from which one could visit the many sights of the area. Among some of the attractions are Fort Huachuca, a modern Army Post built in the 1880's; Cochise stronghold - the refuge and burial site of Chief Cochise; the Amerind Museum; the ghost towns of Charleston, Contention City, Courtland, and Gleeson; Tombstone - site of the gunfight at OK corral, is only 23 miles away; the Copper Queen Mine; the Butterfield Overland Stage Route; and soon, in 1993, a new attraction will open.

In 1974, two spelunkers, Randy Tufts and Gary Tenen, discovered a spectacular 2.5 mile, two room cavern. When the owners of the land were told, they decided that they would keep the site a secret for fear that its delicate beauty would be destroyed by curiosity seekers. But, in 1985, it was decided to reveal the discovery of the cavern to the non-profit Nature Conservancy, who then sold its option to purchase the site to the state of Arizona. Currently the state plans to open Benson, Arizona's new Kartchner Caverns to carefully monitored tours in 1993.



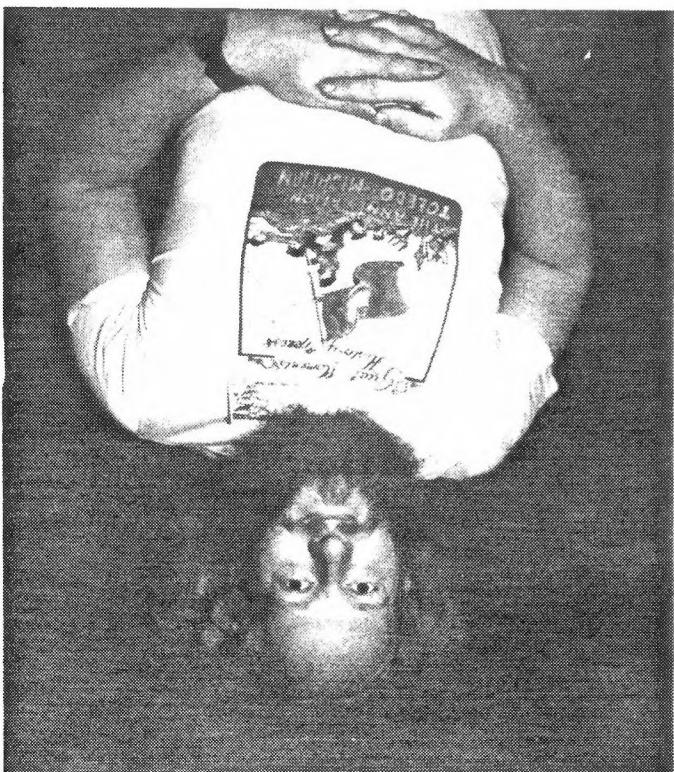
GUY WICKER



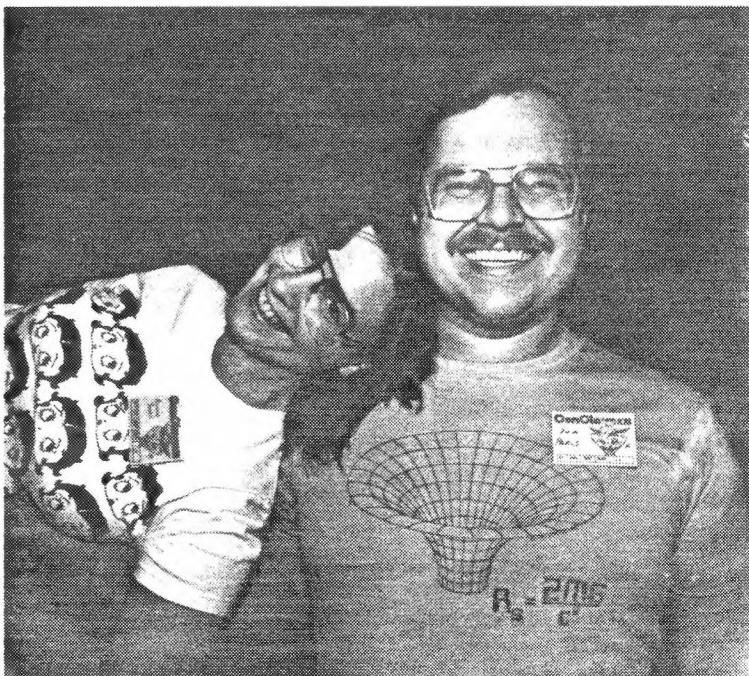
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